

INDEX.

A

Acetylene, portable lamp..... *148
Acoustics, some experiments..... *108
Adulteration. See Pure food.
Aerodynamics.
Novel but impracticable..... *411
Traveling buckets on the Sun... Peak road *488
Peak warfare *488
Aerial warfare. See Aeronautics,
Military.
Aeronautics.
Accidents at Brescia, Italy..... *200
Accidents in the history of aviation..... *243, *244, 245
Aeroplane flights in America..... *374
Berlin meet, and Latham's flight..... *292
Bleriot's Channel flight..... *86, *88, 99
Bleriot's Channel flight and other records in France..... *111, *112
Bleriot's nonstop record..... *62
Cross-Channel flight; and French cross-country records..... *73
Cross-Channel flight by the first American *143
Cross-country flight at Mineola, L. I. *124
Curtiss's flight for the Scientific American trophy *62, 77
De Lambert and Farman record flights..... *354
De Lambert's flight over the Eiffel tower *310
Exhibition at Morris Park, Westchester, N. Y. *29
High and cross-country flying abroad *406
High school of aerial navigation in France *276
Rhône contest *154, 159
Rhône contest, winning the international trophy *180, 181
Scientific American aeroplane trophy *77, 467
Wash or interference dangers *208
Wright brothers and their first American pupils *354
Wright's flights at Fort Myer, 73, *88, 90, *373
Aeronautics, military.
Accidents at Brescia, Italy..... *200
Aerial warfare in 1798..... *295
Artillery for airship attack..... *373
Cody's British army biplane..... *198
Government contract completed by Wright's Fort Myer flight..... *111, *112
Invasion of England by balloons suggested 1803 *195
Our government organization..... *345, 350
Value limited *345
Aeroplanes.
Census of dirigibles and aeroplanes. 390
Cody's British army biplane..... *198
Future development; a talk with Wilbur Wright *290
Grade's monoplane *292
Measuring height above the ground, *406
Wanted—a reliable motor. *106
Agricultural implements.
American farm tools *61
American harvesting machinery—the birth and growth of a vast industry *437-40
Corn husking machine *388
Improved planter *319
Agricultural pests.
Protection of sown crops from crows *331
Agriculture.
basis of our prosperity *426
See also Crops.
Air. See Atmosphere.
Air pump and vacuum gage. *262
Air purification.
Law for workmen *348
Ozone generator in the Chicago Public Library *366
Airsails. See Balloons and airships;
Helicopter.
Alcohol.
Gasoline vs. alcohol as fuel *374
Manufacture from wood waste *352
Tranbe's purifying process. 7
Allloys.
Sodium and potassium *42
Alternating currents.
Experiments using a small direct-current motor *80
Altitudes, measurement.
Height of an aeroplane above the ground *406
Ammonia, atmospheric nitrogen process *328
Ancestors, number of *91, 125, 143, 178, 215, 278, 331, 359
Anesthetics. Prof. Jones and spinal anaesthesia *466, 486
Aral Sea, rise of level *349
Archaeology.
Excavations at Delos *127-29
Relics from the sea *348
Arctic exploration. See North Pole.
Automobiles, portable outboards. *193
Ashokan reservoir, purity of water supply *366
Ash-pans for locomotives, self-cleaning *247
Asphalt, testing bitumens for pavements *336
Astronomical photography.
Photographing a star spectrum. *481, 485
Astronomy.
At the New York Museum of Natural History *30
Heavens in July. *12; August, *78; September, *146; October, *246; November, *318; December, *414

B

Babbitting, shaft support for *116
Ball, medal for discovery *371
Ball and roller bearing design, principles *329-30
Balloons and airships.
Census of dirigibles and aeroplanes. 390
Dirigible made in sections *9
Government house at Omaha. *345, 350
Highest ascension in America *295
Hill climbing record *178, *195
Ice drag for airships *415
Wireless communication *374
Zeppelin Polar expedition *440
Zeppelin III. and its trip to Berlin *154, *237, 242
Baseball at night *72
Batteries. See Electric batteries.
Battleships. See Warships.
Bear. Alaskan brown bear at the New York zoological gardens *491
Bed tents, indoor *416
Bees.
Directive sense *22
Utility of bee-keeping *330
Beer sugar. See Sugar-beet.
Berlin American exposition in 1910. 130
Bicycling trick in a Berlin variety theater *276
Billiard table for ships *41
Biplanes. See Aeroplanes.
Birds.
Birds of passage *335
Theory of soaring 91
Blackland-Eyre nitrate reducing system *110
Black diamonds *162
Blasting.
Electric machine for exploding many blasts simultaneously *484
Bleriot's aeroplane flights. See Aeronautics.
Blind supersensitivity *215
Black printing frame *263
Boats.
Curious sail and pedal propelled craft *415
See also Motor boats.
Boiler explosion in Milwaukee *329
Boiler maker's tool bag *264
Book holder and support *247
Books.
Disinfection of school books *60
Boring. See Drilling and boring.
Botany. Carnivorous plants of the future *469
See also Pollen.
Brassey's Naval Annual of 1909 70
Bricks made of sand lime *372
Brooks' expanding brush for cleansing bottles *64
Brussels.
Electric laboratories *309, *312
Prof. Leffert Loefferts death. *80
Buffalo drainage canal *154
Building materials, 5,000-ton testing machine *21, 26
See also Concrete.
Burglar-proof glass *54
C

Calabash gourds, home-grown *164
Calcium carbide.
Arc and resistance furnace for the manufacture of *108
Calendar. Sensible changes proposed. 106
Canals.
Lakes to the Gulf deep waterway *433-36
National and military value 4
See also Buffalo drainage canal; New York barge canal; Panama canal.
Cannon. See Naval guns.
Cape Cod Canal.
National and military value 4
Carnivorous plants of the future *400

Carpenter's tools.

Home-made saw vice *48
Weatherboard gage *48
Cars. New fare box *391
Casting. Chloride of zinc for art objects *313
Cello played by compressed air *290
Cement.
Formula *376
From blast furnace slag *131
See also Concrete.
Census. Counting by machine *176
Center. Method of finding center of circle *48
Cereals. Oil of *254
Cerebral liquor decisions *334
Chemicals. Fake discoveries *194
Chemistry.
Medievalism in modern *106
Natural synthesis *131
Cherry coal mine, disaster *406, 407
Chicago.
Great Northern railroad center in the world *446-47
Sixty miles of freight subways *448
Chloric. Substitute for coffee *430
Chloride of zinc for casting art objects *313
Christmas tree decoration.
Snow-bound Santa Claus *471
Chronophotography. See Color photography.
Chronosphere—an empire clock *92
Circle, method of finding center *48
Cisterns, filter for *356
Cities.
Economic loss of overcrowding *174
Clamp. See Vice.
Chronometer.
Soaps for removing spots *131
Clement (steamboat).
History and replica *213-14
Climate.
Changes in historic times *298
Clocks.
Chronosphere *92
Universal time piece *346
Clothes hanger *96
Clouds.
Height observed at Vienna, 1908. 5
Clutch, combined friction and jaw *319
Coal.
Briquette making *145
First bituminous coal mined in the United States *416
Rear value of steam coal *102
Coal gas prevention *264
Cody, Capt. S. F.
British army biplane *198
Coffee.
"Chloric as a substitute *440
Non-toxic *346
Coffee-pot, electric *95
Colored spectacles device for registering letters *415
Color of plants changed by cultivation *142
Color photography. Stereoscopic pictures in natural colors *236
Urban-Smith process of moving pictures *164
Coloring.
Colognes.
Experimental color making *336
New chromatic circle *416
Comets.
Daniel's comet *407
See also Halley's comet.
Compressed air. Raising the U. S. cruiser, "Yankee" *385, *388
Comptendium.
Conduit at Guadalajara *325, *328
Edison concrete houses *141-2
Manufacture of enameled concrete blocks *365, *368
Panama Canal construction *44-46
Pottery *47-48, *79-80, *115, *163
Reinforced concrete—warning *482
Waterproofing methods *243
Conveyors.
Novel type of rotary *85, 90
Powerful electric bridge tramway *153, *156, 160-70
Cook, Frederick A.
How he made his latitude observations *197-198
Polar expedition *183, *189, *190
Cooling tower practice *491
Copper mining. Moving a mountain in Utah *273, *281-82
Copyright. Provisions of 1909 act 4
Cork metal. Analysis *351
Corkscrew. Simple method of pulling a cork *96
Cork machines.
Development *440
Gasoline engine corn husker *388
Coronation. Iron that will not rust *448
Cotton.
Industry in the United States *7
New substitute *470
Counting machine for census taking *176
Crane. Electric traveling scale *46
Cream separator. Development *440
Crop. Economic crops of 1909 *406
Crops. Protection of sown crops *331
Cruisers. See Warships.

Crystals, Liquid *74
Cullinan, other half of *366
Curtiss aeroplane flight. See Aeronautics.
Cutler head *247
Cycling. Trick in a Berlin variety theater *276

D

Damascening. New process *76
Daniel's comet *467
Daylight. Advancing the clock *38
Delos. Excavations at *127-29
Deutistry. Altering size and shape of the jaw *106
Diamonds.
Black Diamonds *162
Other half of the cullinan *366
Diet. See Food.
Digestion.
Comparative table of foods *46
Diplocodus, attitude of *334
Dirigible balloons. See Balloons.
Dissertation.
Ozone generator in the Chicago Public Library *366
School books *460
Water purification *354
Distances. Measured by aerial, electric and sound waves *313
Diving bell. New application *121, 127
Drydock.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry docks.
For our biggest battleships *22
Dyes and dying.
Photographic *194
Removing dyes from fabrics 5
Dynamite, thawing *115
Dynamometer. Power indicator for internal-combustion engines *300
Dry

- Grain bin. Construction *376
 Grain elevators. 440
 Grains, handling and storage of our huge grain crop *444-45
 Novel cantilever elevator. 173, *182-83
 Gulf stream, depth of *490
 Guns.
 Army ordnance report *482
 Artillery for air-ship attack *373
 Combination flint and percussion lock gun 75
 Handy man's sub-caliber *390
 Wire-wound versus steel 54
 See also Naval guns.
- H**
- Half Moon (vessel). *207, *210-11
 Replenish *207, *210-11
 Half moon. 142
 Ancient records *110
 Approach *110
 Discovery 318
 Ephemeris 390, 467, 486
 False of the Pope and the comet 259
 History 208
 How return was predicted 414
 Observations during eclipse of the moon 276
 Photograph 276
 Hand-glass. Folding bracket *195
 Harbor defense. *124
 Torpedo boom experiment *124
 Harbors. Dover's great artificial harbor 320
 Harvesting machine, the birth and growth of vast industry *437-40
 Heaven. See Astronomy.
 Helicopter, test of an American 403
 Helium, Rate of production 245
 Herring. Migrations 351
 Hinges. Oddities in invention *376
 Hoe, Robert. Death 242
 Holistic machine. Powerful electric bridge tramway *153, *156, 162-70
 Hobek. Device for measuring by electricity *313
 Honey. Poisons 130
 Hose. Mending garden hose *13
 Hot air pipes. 106
 Screen for the register *264
 Hot water boilers. Furnace connection for kitchen boilers *263
 Hot water faucets. 271
 Circulating pipe for *263
 Houses. Edison concrete house *141-2
 Hudson, Henry. Exploration of the Hudson River *207, *210-11
 Hudson Fair celebration. 274
 Educational value 274
 Naval parade 56, *253, *261-62, 271
 Significance of the festival 238
 Hudson River. Development of steamboats *216-17
 Exploration by Hudson *207, *210-11
 Four periods of history 59
 Hudson tunnel. Flatiron *57, *59
 Hydroelectric plant. Denmark 410
 Hydrostatic paradox. Apparatus for illustrating *390
- I**
- Ice. Artificial and natural 350
 Ice boats. Power-driven scooter 472
 Ice drug for ships *415
 Iceberg refrigeration *448
 Illumination. See Gas lighting.
 Incandescent gas mantles, diminished height 154
 Incandescent lamps. See Electric lamps.
 India rubber. See Rubber.
 Industrial museums. German *161
 Infusoria, earth. Kieselguhr 386
 Ink, Roman 386
 Inlaying, damascening and blending metals *70-77
 Insects. Lather as a trap for 259
 Sugar cane elada destroyed by the canebeetle 238
 Intelligence, scientific tests 350
 Inventions. Some curiosities *332-33
 Iron. Beginning of 46
 How long will supply last? 440
 That will not rust *448
 Iron mines of Lake Superior—how the ore is mined and carried in bulk *490-31, 449
 Irons. See Flat irons.
 Irrigation. Reclamation of the arid lands of the West *428-29, 432
- K**
- Kieselguhr 100
- L**
- Laboratories. Wellcome tropical research laboratories *375, 381
 See also Electric laboratories.
 Ladder. Extension leg 80
 Simple construction 436
 Lakes Superior. Iron mining *430-31, 349
 Lakes to the Gulf deep waterway *433-36
 Lamps. Drop light made from an oil lamp *96
 Portable acetylene generator *148
 See also Electric lamps.
 Latin America. Trade possibilities for U. S. 195
 Latitude. How determined *197-198
 Why the Pole shifts *370
 Lead Smelter production in U. S. in 1908 43
 Lenders. See Rain pipes.
 Lemon oil. How it is made *372
 Lenses. How eyeglasses are made *489-90
 Lepine exhibition of toys in Paris *468
 Lighting. See Gas lighting.
 Lighting. Sheet lighting a reflection 143, 195, 215
 Liquid crystals 74
 Liquids. Porosity *295
 Locks. Chartreuse liqueur decision 334
 Lobsters. Wickford fish-culture station *277-78
 Lock canals. See Panama Canal.
 Lockselves. Self-cleaning ash-pans *247
 See also Electric incinerators.
 Lombrosio, Cesare. Death 310
 London. Filtered water reservoir *3, *11
 Suburban traffic 38
 Lubricants. Fatty lubricants 7
 Lubricating cup, automatic *90
- M**
- Mackerel. Migrations 351
 Magic square *215, *236
 Mail elevator for apartment houses *394
 Man prehistoric. Ancient human skeletons *470
- Man-engine, testing the *413
 Manure spreader 440
 Marine engines. See Dynamometer; Gasoline engines; Speedometers and tachometers; Steam engines.
 Mars. Opposition of Mars, Sept., 1909 *146
 Spectrum 290
 Signaling 43
 Mathematics. Museum at Columbia University to illustrate development *10, 15
 Measuring the height of an aeroplane above the ground *466
 Metal rods, white, distinction 297
 Construction of an ellipse *75
 Device for drawing ovals *396
 Meteorology. Wireless signals between vessels. 41
 See also Atmosphere; Weather.
 Michigan (battleship).
 One-ton dreadnaught *9
 Microphones. Speaking dynamos and transformers 40
 Microscope. Life of the infinitely small 390
 Migration. See Birds; Fish.
 Military art and science. Artillery trains, portable outlooks *193
 Military education. Artistic effects by means of screens. *409
 Blueprinting frame *263
 Carving statues by means of *28
 Daylight development 294
 Device for washing prints *396
 Finger and thumb marks discovered through a photographic lens 215
 Photographing a star spectrum *481-485
 See also Telephotography; Television.
 Physics. Experiment with centrifugal force acting on air 356
 Simplified method of teaching *295, 304
 Physiology. Testing the man-engine *413
 Pipes. Rain-pipes of tin cans *96
 Connecting lead and iron pipes *471
 Pipes, Tobacco. Calabash gourd *164
 Self-smoking *396
 Plaster. Effect of Polar currents on the movements of the earth *30
 Planets. Conjunctions in 1909 *130
 See also Mars.
 Plankton. Effect of Polar currents on Gulf Stream 126
 Planter. Improved model *316
 Plant-like forms. Le Duc's experiments with osmotic pressure *106, 315
 Plants. Carnivorous plants of the future *469
 Electricity and vegetation in Polar regions 255
 Plating spoons and forks at home *395
 Platinum. Technical utilization 254
 Plows and plowing 254
 Gasoline plow tractor *61
 Old methods and new *439
 Plumbing. Connecting lead and iron pipes *471
 Polar exploration. See Cook; North Pole; Peary.
 Pollen. Moulin pollen-gathering patent *485
 Population. Economic loss of over-crowding 174
 Postal service. Coin operated device for registered letters 415
 Mail elevator for apartment houses *394
 Potassium and sodium, liquid alloys 142
 Pottery, Concrete *47-48, *79-80, *115, 163
 Prehistoric man. See Man, prehistoric.
 Propellers. New screw propeller 484
 Speed indicator for marine propeller *156, 315
 Prosperity, agriculture the basis of 426
 Pulley. Combined wooden and steel type *63
 Pure food. Pseudo blood oranges 485
 Puzzles. Numbers 391
 Seven bridges of Königsberg *179
- N**
- Nature. Marvelous paintings. Le Duc's plant-like forms *109
 Nautilus. Tame paper nautilus *283
 Naval annuals of 1909. Brasseys and Jane 70
 Naval guns. New 14-inch gun 190, 274, 366
 Satisfactory tests of the Naval Bureau 482
 Wire-wound versus steel 54
 Navies. Sea strength of our principal naval powers 426
 Navigation. Measurement of distance by aerial electric and sound waves 313
 Tourmaline detectors of submerged objects 143
 Navy, U. S. Department reorganization 462
 New York barge canal, magnitude of 54
 New York City. Improvements in high-pressure fire service 326
 Suburban traffic in London and 38
 Three hundred years of development *224-26
 New York zoological garden. Baby musk ox at the New York zoological gardens *491
- P**
- Nature. Marvelous paintings. Le Duc's plant-like forms *109
 Nautilus. Tame paper nautilus *283
 Naval annuals of 1909. Brasseys and Jane 70
 Naval guns. New 14-inch gun 190, 274, 366
 Satisfactory tests of the Naval Bureau 482
 Speed indicator for twin screw *156, 315
 Prosperity, agriculture the basis of 426
 Pulley. Combined wooden and steel type *63
 Pure food. Pseudo blood oranges 485
 Puzzles. Numbers 391
 Seven bridges of Königsberg *179
- R**
- Races of man. Origin of European people 482
 Railroad signals. Automatic electric system *282
 Fog-signaling apparatus *192
 Railroads. Chicago and the railroad system of the middle West *446-47
 Electrification, Chicago railway terminal project 482
 North Dakota (battleship). Compared with the "Delaware" 386
 Speed trials 352, *353
 North Pole. How man can determine where he is at the Pole *246
 Strange scientific anomalies *279
 Zeppelin proposed Polar expedition. 440
 See also Cook, Peary.
 Northwest passage. Sloop "Gjón" presented to San Francisco *283
 Numbers. Crossword puzzles 301
 Magic square *315, *436
 Problem in arranging 391
 Nut. Perfected form of lock-nut *319
- S**
- Oil. See Petroleum.
 Olives. Largest ranch in the world 74
 Ophthalmidaphanoscopes *336
 Oranges. Technical experiments *56
 Pounds, bird oranges 390
 Orchards. See Fruit culture.
 Ordnance. See Guns; Naval guns.
 Osmotic pressure. Le Duc's plant-like forms *109
 Ostrich farming in Australia 330
 Ovoids, device for drawing *396
 Oxygen cup for emergencies in mines *416
- T**
- Padlock with incised bolt *31
 Palaeontology. Attitude of diplodocus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various uses 31
 Paper hanging. Adjustable template *104
 Thermometer *64
 Patents. British applications for 147
 Patent office. 147
 Attitude of diplocaulus *334
 Panama Canal. Anchoring down the floor of the Gatun locks 158
 Constructing the concrete locks *44-46
 Present condition 386
 Panning without water *31
 Paper, various

